

SEQUENCE LISTING

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<100> BINDING SITE FOR CARCINOEMBRYONIC ANTIGEN (CEA)

<100> Sequence Listing: DYX-016.6 US

<100> US 59/541,345

<100> 2000-04-03

<100> 137

<210> 1

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<221> Description of Artificial Sequence: CEA binding polypeptide

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<221> VARIANT

<222> (1)

<223> Xaa is Asn, Asp or is absent

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<222> (2)

<223> Xaa is Trp

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<223> Xaa is Asp, Phe or Val

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<222> (5)

<223> Xaa is Asn, Glu or Met

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<222> (6)

<223> Xaa is Asn, Ile, Met or Phe

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<221> VARIANT

<222> (7)

<223> Xaa is Asp, Gly, Ile, Lys, Phe or Thr

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<221> VARIANT

<222> (8)

<223> Xaa is Ala, Gln, Gly, Lys or Thr

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<223> Xaa is Ala, Asn, Asp, Leu or Gly

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<223> Xaa is Gln, Leu or Gly

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<223> Xaa is Ala, Trp or Tyr

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<222> (14)
<223> Xaa is Asn, Gln, Phe, Ser or Val

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<222> (15)
<223> Xaa is Arg, Leu, Pro or Ser

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<222> (16)
<223> Xaa is Leu, Ser, Trp or Tyr

<400> 1
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
  1             5             10             15

<510> 2
<511> 16
<512> PRT
<513> Artificial Sequence

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<213> Description of Artificial Sequence: family of
        preferred CEA binding moieties

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<223> Xaa is Asn or Asp

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<221> VARIANT

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<210> 1

<211> Xaa is Ile, Met, Leu or Asn

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<222> (7)

<223> Xaa is Asp, Gly, Ile, Lys, Phe or Thr

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<221> VARIANT

<222> (9)

<223> Xaa is Arg, Asn, Asp, Glu, Gly or Trp

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<221> VARIANT

<222> (12)

<223> Xaa is Ala, Gly, His, Phe, Thr, Tyr or Val

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<222> (16)

<223> Xaa is Leu, Ser, Trp or Tyr

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Xaa Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Xaa

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<212> PRT

<213> Artificial Sequence

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<222> (9)

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Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys

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<210> 4

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: CEA binding
polypeptide

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Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser Tyr

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<210> 3

<211> 16

<212> PR1

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<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 1

Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu

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10

15

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 polypeptide

<400> 6
 Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro Trp
 1 5 10 15

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 <212> PRT
 <213> Artificial Sequence

<220>
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 polypeptide

<400> 7
 Asp Trp Val Cys Glu Lys Thr Thr Gly Gly Tyr Val Cys Gln Pro Leu
 1 5 10 15

<210> 8
 <211> 16
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 polypeptide

<400> 8
 Asn Trp Phe Cys Glu Met Ile Gly Arg Gln Trp Gly Cys Val Pro Ser
 1 5 10 15

<210> 9
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<220>
 <223> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 9
 Asp Trp Val Cys Asn Phe Asp Gln Gly Leu Ala His Cys Phe Pro Ser
 1 5 10 15

<210> 1
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<220>
 <223> Description of Artificial Sequence: parental
 domain for design of microprotein display library

<220>
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 <222> (1)..(12)
 <223> amino acid positions 4 and 9 are invariant Cys;
 all other positions Xaa are varied but not Cys, to
 provide a library of 2x10⁸ different peptides
 based on the template sequence

<400> 10
 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
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<210> 11
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<220>
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 domain for design of microprotein display library

<220>
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 <222> (1)..(11)
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 all other positions Xaa are varied but not Cys, to
 provide a library of 1x10⁹ different peptides
 based on the template sequence

<400> 11
 Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
 1 5 10

<210> 12
 <211> 12
 <212> PRT
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<220>
 <223> Description of Artificial Sequence: parental
 domain for design of microprotein display library

<220>
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 <222> (1)..(14)
 <223> amino acid positions 3 and 10 are invariant Cys;

all other positions Xaa are varied but not Cys, to
provide a library of 2.5×10^8 different peptides
based on the template sequence

<210> 16

Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
1 5 10

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>

<221> VARIANT

<222> (1)..(16)

<223> amino acid positions 4 and 13 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 2.5×10^8 different peptides
based on the template sequence

<400> 13

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 14

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

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<222> (1)..(13)

<223> Xaa is any amino acid except Cys

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<222> (5)..(6)

<223> Xaa is any amino acid except Cys

<400> 14

Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 13

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<220>
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 sublibrary sequence used in designing focused
 secondary library

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<211> 16

Asp Trp Val Cys Val Asn Lys Lys Asp Gln Xaa Xaa Cys Xaa Xaa Xaa
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<212> 16

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sublibrary sequence used in designing focused
secondary library

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<221> VARIANT

<222> (12)

<223> Xaa is any amino acid except Cys

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<222> (15)

<223> Xaa is any amino acid except Cys

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Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
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secondary library

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<211> (1)

<223> Xaa is any amino acid except Cys

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<222> (1)

<223> Xaa is any amino acid except Cys

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Asn Trp Val Cys Xaa Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Ser Tyr
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sublibrary sequence used in designing focused
secondary library

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<221> VARIANT

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<223> Xaa is any amino acid except Cys

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<210> 21

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: isolate of
TN10/9 library found not to bind CEA

<400> 21

Asn Trp Arg Cys Lys Leu Phe Pro Arg Tyr Pro Tyr Cys Ser Ser Trp
1 5 10 15

<210>
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<214>

<215> Description of Artificial Sequence: isolate of
 TMT79 library found not to bind CEA

<216> 22

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 1 5 10 15

<210> 23

<211> 16

<212> PRT

<213> Artificial Sequence

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<215> Description of Artificial Sequence: conserved
 amino acid positions in first family of CEA
 binding peptides

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<222> (9)

<223> X is Arg, Asn, Asp, Glu or Gly

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<222> (12)

<223> X is Ala, Gly, His, Phe, Thr or Val

<220>

<221> VARIANT

<222> (13)

<223> X is Arg, Leu, Pro or Ser

<216> 23

Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
 1 5 10 15

<210> 24

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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic CEA
 binding peptide with C-terminal immobilization
 sequence

<400> 25
 Ser Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser
 1 5 10 15

Tyr Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
 20 25

<210> 25
 <211> 27
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic CEA
 binding peptide with C-terminal immobilization
 sequence

<400> 25
 Ser Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu
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Leu Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
 20 25

<210> 26
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 <212> PRT
 <213> Artificial Sequence

<220>
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 binding peptide with C-terminal immobilization
 sequence

<400> 26
 Ser Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro
 1 5 10 15

Trp Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
 20 25

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 <212> PRT
 <213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: synthesized C-terminal peptide with C-terminal immobilization site

<212>

Asp Thr Glu Tyr His Leu Thr Thr Gly Gly Tyr Val Cys Gln Pro
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Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
20 25

<210> 28

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: C-terminal sequence for immobilizing peptides

<400> 28

Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
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<210> 29

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

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<222> (5)..(6)

<223> X is any amino acid except Cys

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<211> 16

<212> PRT

<213> Artificial Sequence

<210> 31
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<220>
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 <223> X is any amino acid except Cys

<410> 31
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 1 5 10 15

<210> 31
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<220>
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 focused secondary display library

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 <223> X is any amino acid except Cys

<410> 31
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<210> 32
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<220>
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 sequence for sublibrary used in construction of
 focused secondary display library

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 <223> X is any amino acid except Cys

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 <222> (14)..(16)
 <223> X is any amino acid except Cys

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 1 5 10 15

<210> 33

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: template
 sequence for sublibrary used in construction of
 focused secondary display library

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<222> (9)

<223> X is any amino acid except Cys

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<222> (12)

<223> X is any amino acid except Cys

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<222> (15)

<223> X is any amino acid except Cys

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Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
 1 5 10 15

<210> 34

<211> 16

<212> PRT

<213> Artificial Sequence

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<222> (11)..(12)

<223> X is any amino acid except Cys

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 X is any amino acid except Cys

<211> 16
 <212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: template
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 focused secondary display library

<210> 35

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template
 sequence for sublibrary used in construction of
 focused secondary display library

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<222> (1)

<223> X is any amino acid except Cys

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<222> (3)

<223> X is any amino acid except Cys

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<222> (14,...16)

<223> X is any amino acid except Cys

<400> 35

Maa Trp Xaa Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Xaa Xaa Xaa
 1 5 10 15

<210> 36

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: family of CEA
 binding polypeptides

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<223> Xaa is Asp, Asn, Ala or Ile

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<221> VARIANT

<222> (5)

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<223> Xaa is Asn, Thr or Asp

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<222> (6)

<223> Xaa is Leu, Phe, Tyr, Trp, Val Met, Ile or Asn

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<221> VARIANT

<222> (7)

<223> Xaa is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp or Tyr

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<221> VARIANT

<222> (8)

<223> Xaa is Lys, Phe, Asp, Gly, Leu, Asn or Trp

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<221> VARIANT

<222> (9)

<223> Xaa is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln or Trp

<220>

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<221> VARIANT

<222> (10)

<223> Xaa is Gln or Lys

<220>

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<222> (12)

<223> Xaa is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp or Tyr

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<221>

<221> VARIANT

<222> (14)

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<221>

<221> VARIANT

<222> (15)

<223> Xaa is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys or Trp

<220>

<221>

<221> VARIANT

<222> (16)

<223> Xaa is Leu, Met, Val, Tyr, Ala, Ile, Trp, His,

<211> 41
 Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Val Lys
 1 5 10 15

<212> 41
 <213> 41
 <214> PHE
 <215> Artificial Sequence

<216>
 <217> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 41
 Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Val Lys
 1 5 10 15

<211> 41
 <212> 41
 <213> PHE
 <214> Artificial Sequence

<220>
 <221> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 41
 Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Met
 1 5 10 15

<211> 43
 <212> 43
 <213> PHE
 <214> Artificial Sequence

<215>
 <216> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 43
 Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Ile
 1 5 10 15

<211> 44
 <212> 44
 <213> PHE
 <214> Artificial Sequence

<215>
 <216> Description of Artificial Sequence: CEA binding
 polypeptide

<400> 44

Asp Trp Asp Tyr Asn Leu Ile Lys Asn Gln Trp Ile Cys Phe Ala Ile
 1 5 10 15

<210> 47

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 45

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ile Arg
 1 5 10 15

<210> 46

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 46

Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Val
 1 5 10 15

<210> 47

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 47

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Ile
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<210> 48

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 47

<210> 49
 Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu
 1 5 10 15

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 49

Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu
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<210> 50

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 50

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Met
 1 5 10 15

<210> 51

<211> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 51

Ala Trp Pro Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Pro Gln
 1 5 10 15

<210> 52

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 52

Asp Trp Val Cys Asn Leu Pro Lys Asn Gln Trp Phe Cys Asp Val Leu

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<212> PRT

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<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 53

Asp	Trp	Val	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Asp	Lys	Trp
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<223> Description of Artificial Sequence: CEA binding polypeptide

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Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Met	Gln	Trp	Ala	Cys	Asn	Met	Leu
1				5					10					15	

<210> 55

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 55

Asp	Trp	Val	Cys	Asp	Phe	Phe	Phe	Asn	Gln	Trp	Thr	Cys	Asn	Leu	Leu
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<223> Description of Artificial Sequence: CEA binding polypeptide

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<210> 76
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<226> Description of Artificial Sequence: CEA binding polypeptide

<227> 16

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<230> PKT

<231> Artificial Sequence

<232> 16

<233> Description of Artificial Sequence: CEA binding polypeptide

<234> 16

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<223> Description of Artificial Sequence: CEA binding polypeptide

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<213> Artificial Sequence

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Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Thr Leu
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<213> Artificial Sequence

4223> Description of Artificial Sequence: CEA binding polypeptide

Asp Trp Tyr Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Tyr
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6.1.2 Artificial Sequence

<210>
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polypeptide

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<212> 16
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<214>
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polypeptide

<215> 36
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<216> 37
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polypeptide

<219> 37
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<220> 38
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polypeptide

<223> 44
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<224> 44
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<226>

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polypeptide

<211> 16

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<212> PRT

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polypeptide

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polypeptide

<400> 96

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<211> 16

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<215> Description of Artificial Sequence: CEA binding
polypeptide

<400> 98

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<210> 99

<211> 16

<212> PRT

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<215> Description of Artificial Sequence: CEA binding
polypeptide

<400> 97

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<215> 106
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